ADD AND SUBTRACT FRACTIONS

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

To add or subtract fractions, the denominators must be the same.

Then add or subtract the numerators only. Never add the denominators.



$\frac{2}{5}$ + $\frac{1}{5}$ = $\frac{3}{5}$

1 Use the bars to add or subtract. Cross out parts to subtract.

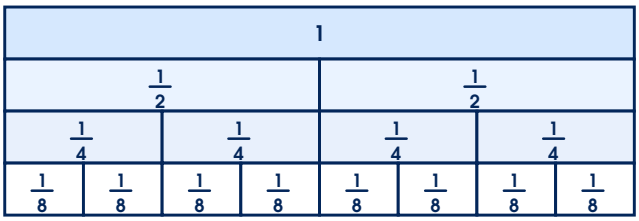
a) 

$\frac{2}{7} + \frac{3}{7} = \frac{\square}{\square}$

b) 

$\frac{5}{8} - \frac{2}{8} = \frac{\square}{\square}$

2 Use the fraction wall to find the missing numerators.



a) $\frac{1}{2} = \frac{\square}{4}$

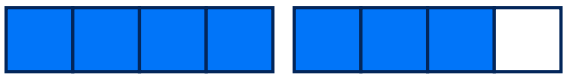
b) $\frac{1}{2} = \frac{\square}{8}$

c) $\frac{3}{4} = \frac{\square}{8}$

d) $\frac{1}{4} = \frac{\square}{8}$

3 Write each mixed number as an improper fraction.

Count how many parts are shaded altogether. Each whole bar is one whole.

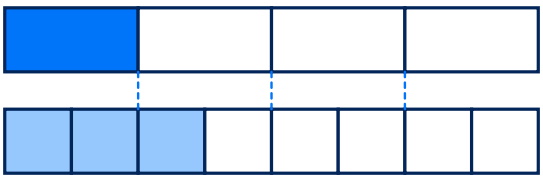
a) 

b) 

$1\frac{3}{4} = \frac{\square}{4}$

$2\frac{1}{3} = \frac{\square}{3}$

4 The bars are the same length. Make the denominators the same, then add.



$\frac{1}{4}$

$\frac{3}{8}$

a) $\frac{1}{4} = \frac{\square}{8}$

b) $\frac{1}{4} + \frac{3}{8} = \frac{\square}{\square}$

ADD AND SUBTRACT FRACTIONS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Different denominators? Find a common denominator first.

$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$



Mixed numbers? Change them to improper fractions first.

$2\frac{1}{3} = \frac{7}{3}$ 2 wholes = 6 thirds, 6 + 1 = 7 thirds



1 Make the denominators the same. Then work it out.

a) $\frac{2}{5} + \frac{3}{10} = \frac{\square}{10} + \frac{3}{10} = \frac{\square}{\square}$

b) $\frac{1}{2} + \frac{1}{3} = \frac{\square}{6} + \frac{\square}{6} = \frac{\square}{6}$

c) $\frac{3}{4} - \frac{2}{5} = \frac{\square}{20} - \frac{\square}{20} = \frac{\square}{20}$

2 Write each mixed number as an improper fraction.

Multiply the whole number by the denominator, then add the numerator.

a) $1\frac{2}{5} = \frac{\square}{5}$ b) $2\frac{3}{4} = \frac{\square}{4}$ c) $3\frac{1}{6} = \frac{\square}{6}$ d) $4\frac{2}{3} = \frac{\square}{3}$

3 Write each improper fraction as a mixed number.

How many wholes can you make? What is left over?

a) $\frac{9}{4} = \square\frac{\square}{\square}$ b) $\frac{17}{5} = \square\frac{\square}{\square}$ c) $\frac{13}{6} = \square\frac{\square}{\square}$

4 Work out each calculation in three steps.

Step 1: change to improper fractions. Step 2: make the denominators the same. Step 3: write the answer as a mixed number in its simplest form.

a) $1\frac{1}{4} + 2\frac{1}{2}$

Step 1 $= \frac{\square}{4} + \frac{\square}{2}$

Step 2 $= \frac{\square}{4} + \frac{\square}{4} = \frac{\square}{\square}$

Step 3 $= \square\frac{\square}{\square}$

b) $3\frac{5}{6} - 1\frac{1}{3}$

Step 1 $= \frac{\square}{6} - \frac{\square}{3}$

Step 2 $= \frac{\square}{6} - \frac{\square}{6} = \frac{\square}{\square}$

Step 3 $= \square\frac{\square}{\square}$

ADD AND SUBTRACT FRACTIONS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Change any mixed numbers to improper fractions first. Then use a common denominator (the LCM of the denominators is quickest). Write the answer as a mixed number and estimate to check.

$2\frac{3}{4} + 1\frac{2}{3} = \frac{11}{4} + \frac{5}{3} = \frac{33}{12} + \frac{20}{12} = \frac{53}{12} = 4\frac{5}{12}$

FLUENCY

1 Work out. Give each answer in its simplest form.

a) $\frac{3}{8} + \frac{5}{12} = \frac{\square}{\square}$

b) $\frac{7}{9} - \frac{1}{6} = \frac{\square}{\square}$

c) $2\frac{3}{5} + 1\frac{3}{4} = \square\frac{\square}{\square}$

d) $4\frac{1}{6} - 1\frac{5}{8} = \square\frac{\square}{\square}$

e) $3 - 2\frac{2}{7} = \frac{\square}{\square}$

f) $\frac{1}{2} + \frac{1}{3} + \frac{1}{12} = \frac{\square}{\square}$

2 Find the missing fractions.

a) $\frac{5}{6} - \frac{\square}{\square} = \frac{7}{12}$

b) $\square\frac{\square}{\square} + 2\frac{2}{3} = 5\frac{1}{4}$

REASONING

3 A baker has two types of flour.

She has $2\frac{1}{3}$ kg of white flour and $1\frac{3}{4}$ kg of wholemeal flour. She uses $2\frac{5}{6}$ kg.

a) Flour at the start: $\square\frac{\square}{\square}$ kg

b) Flour left: $\square\frac{\square}{\square}$ kg

4 Jo has added two fractions.

Jo says, "$\frac{2}{5} + \frac{1}{3} = \frac{3}{8}$"

a) Work out the correct answer. $\frac{\square}{\square}$

b) Explain how you could tell Jo is wrong without working out the answer.

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ADD AND SUBTRACT FRACTIONS

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) A sum of two positive fractions is more than each. ALWAYS SOMETIMES NEVER

b) The product of the denominators is the lowest common denominator. ALWAYS SOMETIMES NEVER

c) Whole number – proper fraction = mixed number. ALWAYS SOMETIMES NEVER

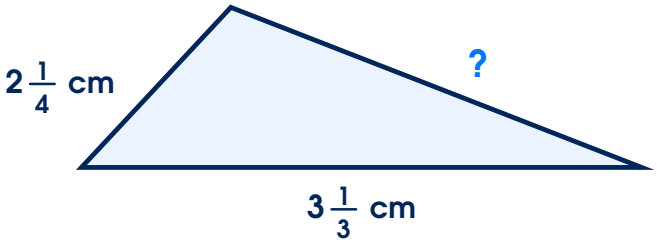
d) Adding numerators and denominators gives the sum. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 Fill in the numerators to make the calculation correct. Find two different ways.

Way 1 $\frac{\square}{4} + \frac{\square}{6} = \frac{13}{12}$ Way 2 $\frac{\square}{4} + \frac{\square}{6} = \frac{13}{12}$

3 The perimeter of this triangle is 8 cm. Work out the length of the third side.



Third side = $\square\frac{\square}{\square}$ cm

★ CHALLENGE FOR ALL

4 In a magic square, every row, column and diagonal has the same total.

$\frac{1}{6}$	$\frac{7}{12}$	$\frac{1}{2}$
	$\frac{5}{12}$	
	$\frac{1}{4}$	

a) Find the total of the top row.

$\square\frac{\square}{\square}$

b) Complete the magic square.

ADD AND SUBTRACT FRACTIONS – ANSWERS

ANSWERS

BUILDING BLOCKS

1 a) $\frac{5}{7}$ b) $\frac{3}{8}$

2 a) 2 b) 4 c) 6 d) 2

3 a) $\frac{7}{4}$ b) $\frac{7}{3}$

4 a) 2 b) $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$

SUPPORT

1 a) $\frac{4}{10} + \frac{3}{10} = \frac{7}{10}$ b) $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$ c) $\frac{15}{20} - \frac{8}{20} = \frac{7}{20}$

2 a) $\frac{7}{5}$ b) $\frac{11}{4}$ c) $\frac{19}{6}$ d) $\frac{14}{3}$

3 a) $2\frac{1}{4}$ b) $3\frac{2}{5}$ c) $2\frac{1}{6}$

4 a) $\frac{5}{4} + \frac{5}{2}$; $\frac{5}{4} + \frac{10}{4} = \frac{15}{4}$; $3\frac{3}{4}$ b) $\frac{23}{6} - \frac{4}{3}$; $\frac{23}{6} - \frac{8}{6} = \frac{15}{6}$; $2\frac{1}{2}$

CORE

1 a) $\frac{19}{24}$ b) $\frac{11}{18}$ c) $\frac{52}{20} + \frac{35}{20} = 4\frac{7}{20}$ d) $\frac{100}{24} - \frac{39}{24} = 2\frac{13}{24}$ e) $\frac{5}{7}$ f) $\frac{11}{12}$

2 a) $\frac{1}{4}$ b) $\frac{21}{4} - \frac{8}{3} = \frac{63}{12} - \frac{32}{12} = \frac{31}{12} = 2\frac{7}{12}$

3 a) $\frac{28}{12} + \frac{21}{12} = \frac{49}{12} = 4\frac{1}{12}$ kg b) $\frac{49}{12} - \frac{34}{12} = \frac{15}{12} = 1\frac{1}{4}$ kg

4 a) $\frac{6}{15} + \frac{5}{15} = \frac{11}{15}$ b) e.g. $\frac{3}{8}$ is less than $\frac{2}{5}$, but the total must be more than $\frac{2}{5}$.

Jo added the numerators and added the denominators.

GREATER DEPTH

1 a) Always b) Sometimes: $\frac{1}{2}, \frac{1}{3} \rightarrow 6$ works; $\frac{1}{4}, \frac{1}{6} \rightarrow 12$, not 24 c) Sometimes: $5 - \frac{1}{2} = 4\frac{1}{2}$, but $1 - \frac{1}{2} = \frac{1}{2}$ d) Never: e.g. $\frac{1}{2} + \frac{1}{2} \neq \frac{2}{4}$

2 $\frac{1}{4} + \frac{5}{6}$ and $\frac{3}{4} + \frac{2}{6}$ $(= \frac{13}{12})$

3 $\frac{96}{12} - \frac{27}{12} - \frac{40}{12} = \frac{29}{12} = 2\frac{5}{12}$ cm

4 a) $1\frac{1}{4}$ b) middle row: $\frac{3}{4}, \frac{5}{12}, \frac{1}{12}$; bottom row: $\frac{1}{3}, \frac{1}{4}, \frac{2}{3}$